

REMARKS

Reconsideration and allowance are respectfully requested.

All claims 17-32 stand rejected under 35 U.S.C. §102 as allegedly being anticipated by Malmgren. This rejection is respectfully traversed.

To establish that a claim is anticipated, the Examiner must point out where each and every limitation in the claim is found in a single prior art reference. *Scripps Clinic & Research Found. v. Genentec, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). Every limitation contained in the claims must be present in the reference, and if even one limitation is missing from the reference, then it does not anticipate the claim. *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565 (Fed. Cir. 1986). Malmgren fails to satisfy this rigorous standard.

Malmgren's invention is directed to a phased array antenna system. See page 1, lines 27-28 and Figure 2 which "discloses the structure of the phased array antenna system" (page 2, line 18). A phased array is a group of antennas in which the relative phases of the respective signals feeding the antennas are varied in such a way that the effective radiation pattern of the array is reinforced in a desired direction and suppressed in undesired directions. Multiple active antennas coupled to a common source or load to produce a directive radiation pattern. Usually the spatial relationship also contributes to the directivity of the antenna. The term "active antennas" describes elements whose energy output is modified due to the presence of a source of energy in the element (other than the mere signal energy which passes through the circuit) or an element in which the energy output from a source of energy is controlled by the signal input. The relative amplitudes of — and constructive and destructive interference effects among — the signals radiated by the individual antennas determine the effective radiation pattern of the array.

In contrast to Malmgren's beam forming phased array transmission, the claims in the instant application are directed to diversity reception and combining at a receiver. Independent claim 17 recites a "receiver diversity antenna arrangement that comprises at least two spaced apart antennas each adapted for reception of an RF signal transmitted from the same transmitter, where each RF signal received at each of the spaced apart antennas is at the same frequency and carries the same information." The diversity antennas are not active antennas and are not part of a phased array. In a phased array antenna system like Malmgren's, the direction of an antenna lobe is changed by delaying the signal from/to the different antenna elements. For the receiver, the receive signals from the different antenna elements are summed together after a delay associated with the specific antenna element. Diversity works using a different principle in order to lower the probability of antenna signals simultaneously experiencing a fading dip. Unlike Malmgren's system, the antenna lobes from the different antennas are fixed. Because the diversity antennas are spaced apart, multi-path signals from the transmitter to the different antennas will not have the same fading pattern. Malmgren's phased array antennas are not used for diversity reception because phase delays are purposefully introduced on the paths from the antenna elements to a common summation point.

Claim 17 also recites "forwarding the diversity signals received on all the antennas of the receiver diversity antenna arrangement, of which one or more have been frequency converted to the base station on a single feeder." It is not clear where Malmgren teaches this forwarding of diversity received signals. The Examiner refers to page 2, lines 15-26, but this text simply says that Figure 2 shows a phased array antenna system that can use existing multiple feeder cables. Indeed, Figure 2 shows six antenna panels coupled to the antenna equipment indoor (ANI) unit with six feeder cables. In contrast, the quoted claim text specifies that the diversity signals

received on all the antennas of the receiver diversity antenna arrangement are forwarded to the base station on a single feeder. Figure 3 only shows one of the six antenna panels/ANBs.

Claim 17 as amended further recites “diversity processing two or more of the forwarded diversity signals to obtain a single enhanced received signal corresponding to the transmitted signal.” Example support for this amended language is found at [0004] in the published application corresponding to this application. This diversity processing step is absent in Malmgren for reasons already explained above.

The Examiner contends that 2-way diversity and n-way diversity using a single feeder and 4-way diversity using two feeders as recited in various dependent claims is disclosed in Malmgren making only general reference to Figure 3 and text on page 3, lines 1-21. The filter splitter/combiner BPF does not perform any type of diversity combining—let alone the 2-way, n-way, and 4-way diversity combining recited. As recited in the independent claims, diversity processing involves processing two or more of the forwarded diversity signals to obtain a single enhanced received signal corresponding to the transmitted signal.

Nor do Malmgren’s phased array antennas have different polarizations as recited in newly-added claims 33 and 34 for the claimed diversity antennas. Example support for this amended language is found at [0002] in the published application corresponding to this application.

Lacking multiple claim features, the anticipation rejection based on Malmgren The application is in condition for allowance. An early notice to that effect is requested.

Skarby et al.
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